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SCIENCE NEWS LETTER

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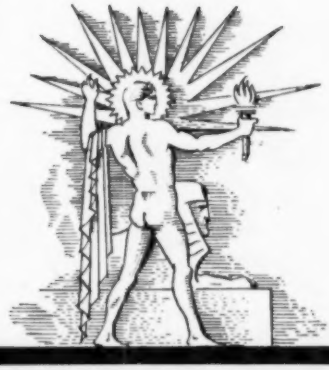
THE WEEKLY SUMMARY OF CURRENT SCIENCE



June 1, 1940

Friendly Enemies

See Page 344

A SCIENCE SERVICE PUBLICATION

Do You Know?

Icebergs sometimes explode as the result of internal strains.

There are 11,000,000 natives in the Belgian *Congo,* and 25,000 Europeans.

In 1840, this country had its first *dental* college, its first dental journal, and first dental society.

There are at least two *eclipses* of the sun each year, but in some years there is no eclipse of the moon.

The University of Berlin is reported to be starting a department for study of *Russian* geography, ethnology, and economics.

Threads with special uses in surgery include those of silver, stainless steel, aluminum bronze, linen, silk, and kangaroo-tail fibers.

An early type of *machine gun* used in the Civil War consisted of a number of .50-caliber musket barrels mounted in a cylindrical casing.

Dogs at the Allied front are trained to carry pigeons to outposts, to take messages when pigeons cannot be used, and to hunt for wounded.

For more than 600 years, more than half the people of Rome were on some kind of *dole,* says Dr. A. P. McKinley of the University of California.

Hoping to induce Americans to eat more *fruit* candies, a University of California laboratory has evolved formulas for inexpensive sweets containing fruits.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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RESOURCES

How much tin does Uncle Sam have in reserve? p. 343.

SEISMOLOGY

How serious was the Imperial Valley Earthquake? p. 341.

SOCIOLOGY

How many people are fleeing from their homes as refugees and evacuees? p. 349.

An Indian woman has been elected to the *tribal council* of the Bannock Indian tribe, in Idaho.

Carrots can be scraped with less waste since streamlined varieties have become popular, home economists say.

A new apparatus is being devised by government scientists to measure the luster in *furs*—important in determining value of pelts.

The German government has requisitioned *church bells* for the metal they contain.

There are more than 10,000 *airplanes* in civil use in the United States, serving 70 kinds of business organizations.

Antarctic birds and plants will be studied by three men of the Byrd Antarctic Expedition assigned to an outpost in Rockefeller Mountains.

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PSYCHIATRY

Youth Is Made Well After 17 Years of Epilepsy

"Eugene" Will Have To Take Dilantin All His Life But Need Not Fear Fits; Brain Is Not Deteriorated

AN "EPOCH MAKING" case which revolutionizes the medical profession's idea of mental deterioration in epilepsy stirred the meeting of the American Psychiatric Association in Cincinnati. The case is of "Eugene," reported by Dr. Howard Fabing, Cincinnati.

Eugene is a twenty-three-year-old youth who spent seventeen years of his life in an almost continuous epileptic fit. He is now completely well and normal, thanks to the new epilepsy remedy, dilantin. Fully as remarkable as his escape from the imprisonment of the disease has been his remarkable mental achievement.

On Nov. 29, 1939, his mental age according to the Stanford Binet test was 6.7 years. By the same test now his mental age is 10.2 years, a gain of nearly four years in five months.

The phrase "epoch making" was applied to this case report by Dr. Tracy J. Putnam, of New York City, one of the originators of the new epilepsy remedy, dilantin. This is a chemical which Eugene and other epileptics take every day in the form of a capsule to be swallowed like a pill.

Eugene will probably have to go on taking dilantin for the rest of his life. Otherwise he will be able to live normally and Dr. Fabing said that he expects Eugene will soon be able to return home and start living the life of any twenty-three-year-old young man.

Until he was six and one-half years old, Eugene was a perfectly normal child. Then he began having epileptic seizures of every kind, from the little lapses of consciousness known as Petit Mal epilepsy to the terrifying mouth-frothing fits of Grand Mal epilepsy. They were so frequent and so severe that for the next seventeen years the boy lived in almost one continual fit, Dr. Fabing said. During this time he learned nothing.

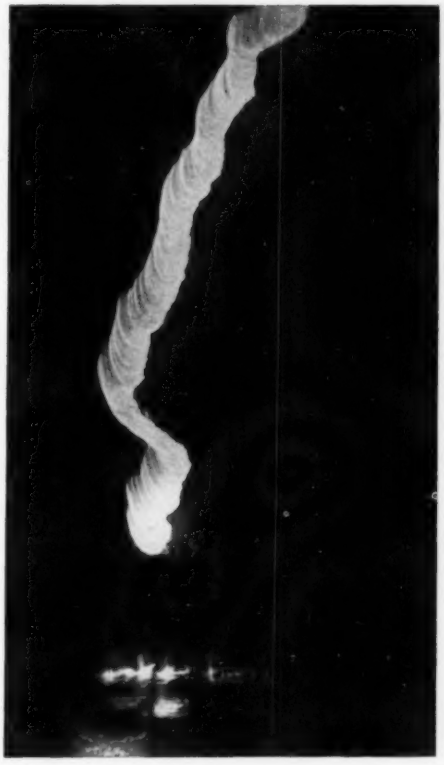
He got his first dose of dilantin on November 8, 1939, and has not had a fit since. During this time, of course, he has continued to take the medicine daily.

Since January 20 of this year he has been living in the home of Dr. Doris Twitchell-Allen in Glendale, a small town a few miles north of Cincinnati. On that date he began his tutoring under Mrs. Richard B. Freeman. Dr. Fabing emphasized that a great share of the credit for Eugene's progress belongs to Dr. Twitchell-Allen who took him into her home regardless of how it upset her own household and who by daily care and guidance helped transform him from a six-year-old personality who could hardly feed himself into a well-mannered, socially mature young man.

The remarkable progress Eugene made under Mrs. Freeman's tutoring, shown by his increased ability and performance on the mental test, shows that the brain does not deteriorate in epilepsy, as formerly believed. Dr. Fabing believes that Eugene's brain grew anatomically, that is, in structure, to keep up with the growth of his body, but it could not develop as a thinking organ until it was released from the thrall of the epileptic condition by the dilantin treatment. His brain is now growing physiologically. This, Dr. Fabing said, raises the question of what is educability.

Keeping pace with his mental learning has been Eugene's learning to live as a social person. He appeared on the moving picture screen as a normal, if somewhat slow-moving, person able to play ball or badminton, conducting himself with ease and suavity at a formal dinner party, and picking up a year-old baby and playing with him as gently and competently as any adult.

Science News Letter, June 1, 1940



PLAYING WITH LIGHTNING

This fiery tornado, spiralling to earth, is really a stroke of lightning over Lake Maggiore, Switzerland. The photograph was made from a boat, which was rocking and drifting while the exposure was made. Thus came the widening of the flash. (From "Playing with Lightning," by K. B. McEachron and K. G. Patrick.)

GENERAL SCIENCE

Scientists Would Like To Bring Peace to World

OVER 500 American scientists have joined in a declaration in support "of all reasonable programs which seek a better understanding of the causes of war and which will preserve peace for the United States and bring peace to the world."

Sponsored by the American Association for Scientific Workers and transmitted by its president, Dr. Anton J. Carlson, eminent University of Chicago physiologist, to President Roosevelt, this peace resolution was prepared and circulated before the Nazi invasion of Holland and Belgium and penetration into France. A similar resolution was adopted by the Psychologists League at their recent meeting in New York.

It gives voice to the wish of almost all thinking men and women that war should cease destroying the more constructive aspects of civilization.

It calls war wasteful, futile, out of harmony with science.

It warns that democracy and freedom of thought are endangered by the emotional turmoil which accompanies war.

It declares that "the continuance of progress now largely depends upon the scientists of neutral nations."

Almost unanimous assent will be found for such expressions. But to the statement that "American scientists can best fulfill their share of this responsibility if the United States remains at peace" there is some opposition.

Is this not a categorical conclusion

based on premises which are still in the making? asks Dr. Peyton Rous, of the Rockefeller Institute for Medical Research. He questions whether scientists, as scientists, should endorse such a conclusion, which attempts crystallization of their attitudes toward a conflict, while all is in flux.

Many people are convinced, in Dr. Rous' opinion, that the gains of dictators have been made at the expense of nations that chose to remain at peace in the attempt to insure the continuance of progress. The unqualified appeal for the United States to remain at peace may be taken as a message to the dictators: "Do what you choose. We won't raise a finger!"

Science News Letter, June 1, 1940

MEDICINE

Shaking Palsy Treated With Synthetic Vitamin

Parkinson's Disease, Hitherto Hopeless Responds Within a Few Minutes to Injection of Vitamin B_6

REMARKABLE changes in Parkinson's disease patients treated with vitamin B_6 administered intravenously, effective within a few minutes after the treatment, were reported by Dr. Tom D. Spies of Hillman Hospital, Birmingham, Ala., speaking at the 100th annual meeting of Illinois State Medical Society.

A severe and lingering disease called also paralysis agitans, Parkinson's disease is a shaking palsy, marked by muscular weakness, stiffness and pain. Its treatment has hitherto been considered more or less hopeless.

Dr. Spies and his colleague, Dr. William B. Bean, treated 11 cases of Parkinsonism of at least four years' duration, eight of which were arteriosclerotic and three of which were post-encephalitic. Upon the cases following encephalitis vitamin B_6 produced the most remarkable results. A few minutes after the injection there was marked improvement. Tremor and rigidity decreased. The patients were able to walk without customary stiffness.

Two of the arteriosclerotic patients showed definite improvement, five were unchanged and one was considerably worse.

Dr. Spies also reported that Dr. Norman Jolliffe of the New York University College of Medicine in a personal communication has stated that he has obtained similar results following administration of vitamin B_6 to patients with Parkinson's disease.

Temporary relief of neuromuscular symptoms, roaring sensations in the ears, anorexia and insomnia in selected persons with malnutrition, obtained through use of another synthetic vitamin, alpha-tocopherol, or vitamin E, the so-called fertility vitamin, was also reported by Dr. Spies. These patients were badly nourished but gave no evidence of pellagra, beriberi or riboflavin deficiencies.

Last year Dr. Spies reported that vitamin B_6, then newly synthesized, produced dramatic, 24-hour recoveries of patients with pellagra and beriberi that recurred when they lived on their old inadequate diets.

Science News Letter, June 1, 1940

PSYCHIATRY

Asks Aid of Psychiatrists In Selecting Men for Navy

THE U. S. Navy has asked the advice of the American Psychiatric Association, meeting in Cincinnati, in selecting mentally sound men for this branch of the national defense.

A trained psychiatrist at every recruiting station, to weed out applicants likely to break under the strain of battle, would be the best way of accomplishing the job, Captain Dallas G. Sutton, M.C., U. S. Navy, said. There are not enough psychiatrists to man every recruiting station, however. There are only enough to meet the needs of naval training stations and the larger naval hospitals.

More than 3,000 mental casualties of war are expected by naval authorities on the basis of experience during the World War. With an average strength of 500,000 men in the naval forces during those years, there were 711 men discharged in 1917 because of mental ill health, 1,457 during 1918 and 1,437 during 1919.

"In the event of national emergency today, the complement would be about the same as in the two years of the World War," Captain Sutton said. "For that reason, it is felt that we may safely utilize these figures in connection with general planning."

How will officers and men stand the mental strain of long hours of waiting for a major naval battle plus the actual combat itself? Years of rigorous drilling and instruction to such an extent that most of the men are "letter perfect in their reactions" do not give the answer to this important question because, although every effort is made to parallel actual battle conditions, there is no way of injecting the psychological factors of actual battle in these drills.

"For this reason, there is no means of evaluating the possible effects of fear, fatigue, and other allied factors on the individual, or the organization as a whole," Captain Sutton said. "Conditions may be such in advance of an engagement that all hands may have to be at their stations for some hours before actual contact with the enemy is made, and those who should know indicate that a battle betwen capital ships may last from a few minutes to an hour or more. The general anticipation is that such a battle would be very short.

"One does not have to accentuate the details of such possibilities in order to stress the importance of psychological reactions in connections with the service psychiatric problems."

Science News Letter, June 1, 1940

● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by U. S. Coast and Geodetic Survey and the Jesuit Seismological Association of the following preliminary epicenters:

Sunday, May 19, 10:17.8 a.m., EST
East of Sakhalin. Latitude, near 50 degrees north. Longitude, 158 degrees east. Depth, 500 km.

Tuesday, May 21, 1:48.9 p.m., EST
Tonga Island Group. Latitude, near 23 degrees south. Longitude, 178 degrees west. Depth, 400 km.

Friday, May 24, 11:38.8 a.m., EST
Off Peruvian coast, near Callao. Latitude 12 degrees south. Longitude 78 degrees west. Strong, destructive shock.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, Feb. 24,

SEISMOLOGY

Imperial Valley Earthquake Fifth in Amount of Damage

Violent Shock Apparently Resulted From Shift In Deep Rock Fissures, Part of San Andreas Fault

IMPERIAL Valley's earthquake, with damage estimated at five to six million dollars, rates as fifth in property destruction among recorded American earthquakes, seismologists of the U. S. Coast and Geodetic Survey stated. Serious as it was, it is dwarfed by such catastrophes as the San Francisco shock of 1906 and the Long Beach earthquake of 1933. The San Francisco disaster accounted for $24,000,000 loss from direct effect of the earthquake and $400,000,000 that went up in the fire. The Long Beach quake smashed down $41,000,000 worth of property.

Other costly earthquakes in this country have included: Santa Barbara, Calif., 1925, $6,250,000; Charleston, S. C., 1886, $5,500,000; Helena, Mont., 1935, $3,500,000. There have been several quakes of far greater intensity than any of these, for sheer power of earth movement, but they happened in desert or sparsely settled regions and so caused little or no loss of life or damage to property.

The earthquake of May 19 apparently resulted from a shift in deeply buried rock fissures that are a southward continuation of the San Andreas fault, which was responsible for San Francisco's ruin a generation ago. This is one of the most actively seismic faults in this country, and has been responsible for literally hundreds of earthquakes, some of them quite serious.

The exact location of the fault as it runs under the Imperial Valley is not known because it is covered deeply by loose earth and gravel. This unconsolidated material transmits the earthquake movement from the rocks beneath in a way that is extremely destructive to weak buildings, but less damaging to good steel frame and sound reinforced concrete structures.

The last severe earthquake in the Imperial Valley region occurred in 1934 and was centered south of the Mexican border near the head of the Gulf of California. In 1937 an earthquake was felt in the Valley, but it originated in the mountains outside, and caused little disturbance. A heavy quake occurred in the Valley on Jan. 1, 1927, and was followed by hundreds of aftershocks during the year.

The May 19 shock was recorded on many seismographs all over the United States and Canada. Among them were instruments designed for use at Boulder Dam, now set up for testing in the laboratories of the Coast and Geodetic Survey in Washington, D. C. The shock was also recorded by instruments of the Survey's magnetic observatory at Cheltenham, Md., which are not intended for earthquake study at all.

Two scientists of the U. S. Coast and Geodetic Survey's San Francisco office, Frank T. Ulrich and Marion Gilmore, arrived in the stricken region early on Monday, May 20. Examination of the records of a strong-motion instrument which had been set up at El Centro indicated a disturbance of considerable intensity. The automatic pen was thrown off the paper in both directions, Mr. Gilmore reported to the Survey's Washington headquarters. Intensity was apparently of violence 10, on a scale of 12 grades of intensity. They found one fault with lateral displacement of 12 feet and a change of three feet in ground level.

Records wired to Science Service and interpreted by Coast and Geodetic Survey seismologists indicate that the epicenter was not far from Brawley, Calif. Heaviest property damage occurred in that town.

Science News Letter, June 1, 1940

MEDICINE

Soldiers May Carry Protection Against Germs

SOLDIERS—German, French, British—going into battle, may be carrying, along with vials of iodine, emergency rations, bandoliers of cartridges, life-saving pills of sulfanilamide or Prontosil or some related germ-defying chemical, for protection against war wound infections. Medical authorities of all belligerent forces know that the earlier in an infection these chemical remedies are given, the more effective they are. It is believed that they have supplied soldiers with prophylactic doses as battle equipment. The idea is that each soldier, if wounded, would swallow some of the protective chemical. The treatment would not be delayed even long enough to reach field dressing stations.

Science News Letter, June 1, 1940

BIOLOGY

Embryo Growth Watched In Eggs Opened on Ends

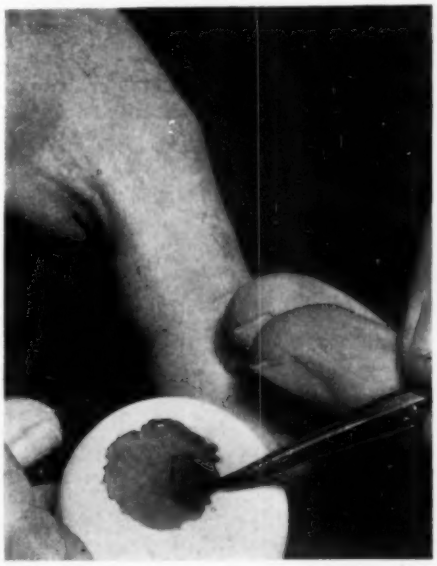
DEVELOPMENT of embryo chicks can be watched, and subjected to experimental changes, by means of a technique of "windowed" eggs developed at the Ohio State University by Prof. John W. Price and Ernest V. Fowler. Protection between observation periods is afforded by caps made from the large ends of other empty eggshells.

In preparing an egg for "inspected incubation," a small hole is made at the large end, and the shell broken carefully away with sterilized forceps until it is enlarged sufficiently for working purposes. It is then set carefully upright in an incubator and the eggshell cap slipped over it. From time to time the cap is lifted off, while observations are made.

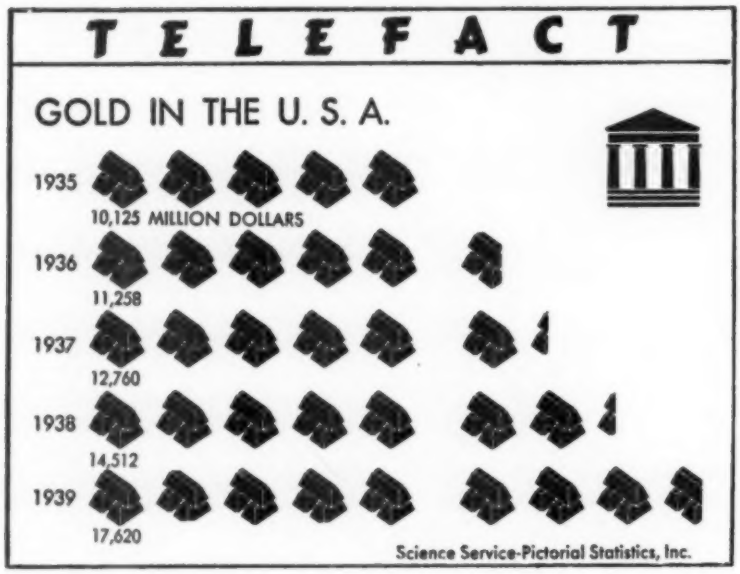
Surprisingly little bacterial infection occurs, the two researchers state, (*Science*, March 15). They have carried a number of eggs through to normal hatching, in the usual period of 21 days.

Science News Letter, June 1, 1940

At the Palace of Discovery, *science museum* in Paris, visitors can perform famous scientific experiments or watch them done, under direction of the staff of 60 demonstrators and lecturers.



WINDOWED EGGS



AERONAUTICS

Fifty Thousand Planes Will Probably Cost $5,000,000,000

Hundred Thousand Engines Needed for Fifty Thousand Planes and They Will Cost at Rate of $10 a Horsepower

FIFTY thousand Army and Navy planes, as called for by President Roosevelt, would cost the taxpayers perhaps five billion dollars or more for planes, engines and spares alone, authoritative aviation industry spokesmen told Science Service.

This sum, greater by far than the value of all American aircraft produced since the end of the first World War, does not include the cost of the expanded Army-Navy flying services to operate them or the gasoline they will consume or any other maintenance or operation expenses.

Though there is not even a reliable estimate of the current value of American aircraft factories, the colossal plant expansion called for by the President's proposed 50,000-a-year production rate will cost at least $300,000,000, part of which will undoubtedly be met by industry profits, these same sources believe.

Past plant expansion, which has come close to doubling floor space in both aircraft and power plant factories in the past two years, has been financed from earnings, loans by the Anglo-French Purchasing Board and premiums on equipment delivered to the Allies, as well as stock issues. Not all the $200,000,000 to be made available to the President—half appropriation of actual funds and half authorization to let contracts—will be available to the aircraft industry. Gun and munitions factories are considered by military and economic experts to be more in need of such funds. Outside the aviation field, there has been practically no munitions industry in the United States since 1918.

The 50,000 planes will cost in the neighborhood of $100,000 apiece including spare motors and parts, which is about the present average for military planes of the different types. A single-seat pursuit now runs to about $50,000, a twin-engined fighter like the Lockheed P-38 to very nearly $90,000 and a high performance twin-engined bomber to almost $150,000. Substantial per-plane savings will be possible under the contemplated program, but there is a better-than-even chance that these will be eaten up by the race for continually greater speed and armament.

One hundred thousand engines will be needed for every 50,000 planes produced. Thousand horsepower engines or larger today cost more than $10 per horsepower. Even with mass production, the price is not likely to be driven below this ten-dollar-level. A billion dollars of the five billion, therefore, would have to go for motors.

The 50,000-a-year program would require the tripling of floor space of aircraft factories, doubling the area of engine plants, multiplying today's 100,000 aircraft workers by three and operating all plants around the clock, a formal statement by Col. John H. Jouett, Aeronautical Chamber of Commerce president, pointed out.

May Take Three Years

Col. Jouett's office would not even hazard a guess as to how long it would take to boost the present 12,000 planes and 25,000 engines a year to the new goal. But others agreed that the industry would be doing remarkably well if it were able to achieve this within three years. Several basic changes in the structure of the industry will result.

First, the trend toward subcontracting will become far more widespread than it already is. A situation similar to that in Germany and England, where more than half the armies of mechanics working on aircraft production work outside the regular industry, may obtain.

Second, the bewildering variety of types now under production will be sharply reduced. Officials of the Douglas Aircraft Company of Santa Monica, Calif., currently producing nearly a dozen models, have stated, for example, that they could increase production by at least half if they were turning out half as many models. A Science Service correspondent has seen in confusion on the floor of the Douglas plant at the same time Douglas DC-3s (21-passenger airliners), B-18As for Canada (an obsolescent Army bomber), B-26s (new heavy twin-engined bomber), B-20s (375 mile-an-hour attack bomber) and others. Greater standardization may have been desirable before; it is compulsory now.

More complete tooling and a greater approach to straight-line production methods will result. Standardization will undoubtedly lead to construction of approved types under license in factories other than the ones where the designs originated. This system has been followed in Germany and England for some time. A start in this direction is to be made under an arrangement whereby the Consolidated Aircraft Corporation and the Boeing Aircraft Company are to produce Douglas B-20s for the Allies under license.

Several stiff obstacles will have to be hurdled if the 50,000-a-year program is to succeed. The machine tool industry, already working night and day to supply

expanding aircraft and other factories, presents something of a bottleneck. Machine-tool makers cannot be trained overnight. A second problem likely to cause sleepless nights for executives is the supply of experienced aeronautical engineers. Technical colleges are producing a flood of engineering graduates, but an aeronautical engineer generally requires two or three years of experience before he can be regarded as a highly useful individual around a factory.

Some phases of aircraft work, such as production of high-powered in-line engines like the Allison, are so highly specialized that only the group now working in them can be considered competent to superintend expansion. They are already working overtime.

An Army Air Corps of between 350,000 and 400,000 men, including at least 35,000 pilots, would be required to man the Army's share of the 50,000 warplanes President Roosevelt proposes for national defense, it was estimated.

Navy Needs 15,000

Fifteen thousand or more pilots would be needed by the Navy. Approximately ten men are needed in the Army Air Corps for every plane.

The Air Corps' current strength is 28,000, including 2,000 regular and 1,000 reserve pilots. Just over 1,200 combat planes and 800 trainers are now actually on hand. Under last year's expansion schedule, Air Corps strength was expected to reach between 5,500 and 6,000 planes and 75,000 men by mid-1942.

Navy planes on hand are also just above the 2,000 mark. The Navy has upwards of 2,000 pilots. Just how many men in the Navy can be considered part of the marine equivalent to the Army Air Corps, however, is difficult to determine. Aircraft carrier crews perform both aviation and maritime work.

Sweeping reorganization of the Air Corps' already once-speeded-up training system will be necessary, if the President's program becomes law. Nine civilian schools employed to give Army men primary training, plus famed Kelly and Randolph Fields near San Antonio, Texas, are now grinding out pilots at a 2,400-a-year rate. A year ago, with only the two Texas schools in use, 800 pilots were graduated each year. Unlike Europe, where as many as half the military pilots are non-commisioned officers, all Army flyers are at least second lieutenants. The training course takes one year.

Army and Navy air forces, together 50,000 strong, would require the training of pilots at a rate approaching 10,000 a year, it is believed. Already aviation industry figures are speculating on the possibility of gearing the Civil Aeronautics Authority's private pilot training program to the expanded requirements of national defense. Seventeen thousand young men and women each year are receiving 50 hours of basic instruction, which is not, however, aimed at military flying. The C.A.A. program, launched on a full scale only last fall, is being conducted at colleges and universities throughout the country. Approved commercial flight instructors are the teachers under a contract arrangement with the C.A.A.

No matter how much of the primary training is transferred away from Kelly and Randolph Fields, however, it appears that these two schools will have to give up their honored position as the only "universities" for advanced Army flying in the United States. European pilots on an average pile up many fewer flying hours in instruction and are put through the training mill in 5 or 6 months. Army comment is not available on this point, but it is doubtful whether the American training course will be similarly stepped up.

Science News Letter, June 1, 1940

RESOURCES

Nation Buys Ten Per Cent of Tin Stock Pile Requirements

Total Reserve Is Now 13,000,000 Pounds; Prize Tin Region of World Lies in East Indian Colonies

THE United States has purchased 6,724 tons of tin since last November to build up a reserve stock pile of this strategic material, it is shown by a survey of U. S. Treasury Department Procurement Division orders.

Despite the total of over 13,000,000 pounds at about 50 cents a pound—$6,500,000—the reserve is believed to be only about a tenth of the total needed reserve of the nation. Army officials are reluctant to discuss exactly what tonnage of tin the nation would like to have for potential war reserves, but some years ago the National Resources Board fixed 60,000 tons as a minimum wartime reserve.

If, while England and the Netherlands are engaged in war in Europe, Japan should take over the Dutch East Indies and the British Straits Settlements in Malaya, the Land of the Rising Sun would at once control nearly half of the world's tin output.

Last year the Straits Settlements produced nearly 31% of all the virgin tin in the world while Netherlands India produced 17%. It is a significant comment on world production that the American purchases since November of last year have been virtually all from the Orient. Minor contracts have been awarded for Bolivian tin.

Bolivia produces 15% of the world output, not in the form of pure tin but as tin concentrates which run from 70% to 80% tin content. This concentrate has to be further refined; an operation carried out mainly, in the past, in England and in the Netherlands. It is understood that two tin smelters are contemplated in the area of New York harbor to take over the smelting of Bolivian tin.

Tin has long been on the strategic minerals list of the United States, for American production has amounted to only about 90 tons a year, over a five-year average. The nation's requirements, on the other hand, run nearly 100,000 tons yearly, of which about 75,000 tons must be virgin metal. The remainder consists of secondary tin obtained from scrap which collects in tin can factories and from "junk" alloys which contain tin.

Prize tin region of the world, and what may attract Japanese eyes, is of course the East Indian colonies of England and the Netherlands. In this region the tin ore is cassiterite, or tin oxide, which runs as high as 78.6% tin. Mining is a simple operation by dredges, of which more than 100 are available. In addition anywhere from 50,000 to 100,000 Chinese laborers work at tin mining, according to the world demand.

Science News Letter, June 1, 1940

Potatoes are practically the only important plant food in which Great Britain has become self-sufficient.

CHEMISTRY

Prune Pit Oil Rich In Vitamins E and A

FROM the pits of prunes comes a new and promising California by-product, prune pit oil, reddish in color with pleasant aroma and taste. Relatively rich in vitamin A and apparently in vitamin E. Authority: Dr. Agnes Fay Morgan, head of the home economics division of the University of California's College of Agriculture.

Science News Letter, June 1, 1940

MILITARY SCIENCE

Armor for British Tommy Advised by Surgeon

IF THE European war gets past the Blitzkrieg stage to anything like trench warfare, British soldiers may be wearing armor plates in the respirator boxes of their gas masks. According to word just received at the American Medical Association, Kenenth Walker, English surgeon with experience in treatment of wounds in front line conditions during the last war, now recommends the use of such armor.

His recommendation seems likely to be followed in view of the fact that such an armor device which he suggested near the close of the last great war won the approval of Winton Churchill, then Minister of Munitions and now Prime Minister, to the extent that Mr. Walker was recalled to work at the ministry as expert in light armor.

A soldier cannot, because of the weight, wear armor that would protect him against bullets, but nearly two-thirds of the wounded in the World War were put out of action by projectiles other than bullets, Mr. Walker recalls now in a report to the *British Medical Journal*. Over one-third of those found dead on the battlefield had chest wounds. Mr. Walker noted that a large number of men died in the trenches as a result of being hit in the front of the chest by tiny fragments of grenades or shell that tore open a large blood vessel, death following as a result of hemorrhage.

A steel plate, curved to fit the chest, would, Mr. Walker believed, protect the most fatal area if worn in the box respirator when the latter is carried in the alert position. His suggestion for such a device during the World War was pigeon-holed for a time until a friend brought it to the attention of Churchill. Mr. Walker declined the position as light armor expert then offered him, because it had taken two years to get the steel helmet introduced and the war was nearly over.

Now, however, he believes that since the principle of protecting the head from projectiles of low penetrating power has been accepted, it is time to extend the principle to other vulnerable areas.

Science News Letter, June 1, 1940

PHYSIOLOGY

Too Much Vitamin A May Cause Blackheads

BLACKHEADS may result from too much vitamin A in the diet, Dr. Richard L. Sutton, assistant professor of dermatology at the University of Kansas Medical School, declared at the meeting of the American Academy of Pediatrics in Kansas City.

This is the first time, Dr. Sutton said, that such an effect has been traced to vitamin A. This vitamin, needed by children for normal growth, "has not previously been accused of being harmful even in large dosage."

Vitamin A is one of the vitamins in cod liver oil. Butter, carrots and green leafy vegetables are other sources of the vitamin.

Acne, Dr. Sutton believes, is due to improper metabolism of fatty ingredients in the diet. Successful treatment, he has found, is to exclude milk, butter, cream, ice cream and cod liver oil from the diet. He also gives thyroxin, the thyroid gland hormone, to help the patient take care of oily substances in the diet, and resorts to local surgery to open the blackheads and pimples and remove their fatty deposits.

Science News Letter, June 1, 1940

BIOLOGY

Chromosomes Increased By Chilling of Eggs

ANIMALS with three times the normal number of chromosomes in their cells were reported by Dr. Raymond B. Griffiths of Princeton University to the American Association of Anatomists meeting in Louisville. The animals were newts, which are long-bodied, tailed relatives of frogs and toads. Dr. Griffiths was able to produce specimens with the triple chromosome count by chilling their eggs at temperatures a few degrees above freezing. He also obtained newts with half the normal chromosome number by the same chilling technique.

Science News Letter, June 1, 1940

IN SCIENCE

ZOOLOGY

Raccoon Saves Life of His "Natural Enemy"

See Front Cover

NATURAL animosity between a raccoon and a coati-mundi "refugee" from the tropics was overcome at the Denver Zoo when Keeper Clyde E. Hill secured the two as babies and brought them up together.

The affection which developed between the two animals saved the life of the thin-coated tropical animal during the severe cold of last winter. The heavy coat of the raccoon kept both warm. The two animals, cuddled together, are shown on the cover of this week's SCIENCE NEWS LETTER in a photograph by Pat Coffey.

Science News Letter, June 1, 1940

MEDICINE

Clinch Allergy Diagnosis By Finding of Cells

DISCOVERY of rosy-stained cells in nasal secretions will often settle the question of whether a child has a cold, or sinus disease or an allergy like hay fever, Dr. French K. Hansel, of Washington University School of Medicine, told the American Academy of Pediatrics.

The rosy-stained cells are called eosinophiles because they can be easily stained for microscopic detection by the red coal tar dye, eosin. These cells are found in large numbers in the nasal secretions of patients with respiratory allergy, Dr. Hansel said.

Science News Letter, June 1, 1940

ZOOLOGY

Strange Beast and Birds Sent Back from Liberia

PIGMY hippopotamuses, a huge eagle that preys on jungle monkeys, an armored anteater and a group of monitor lizards are among the strange beasts and birds sent back from Liberia, on the west coast of Africa, by Dr. William M. Mann, leader of the Smithsonian-Firestone expedition. Not the first of refugees from Africa, it is hoped.

Science News Letter, June 1, 1940

NCE FIELDS

PSYCHOLOGY

Identical Twins' Minds Resemble Each Other

JUST how much more identical twins resemble each other in intelligence than do other brothers and sisters is revealed by statistics reported to the Eastern Psychological Association by Dr. James D. Page, of the University of Rochester.

The chances, as figured by Dr. Page, are that nearly 50% of identical twin pairs will differ by less than five IQ (Intelligence Quotient) points as measured on the standard Stanford-Binet test. Only 23% of ordinary brothers and sisters would so closely resemble each other in intelligence. And such a small difference could be expected in only 17% of unrelated chance pairs.

More than 80% of identical twin pairs will score within 10 points of each other, and differences greater than 15 IQ points may be expected in only 5% of such twins.

The probability is that one in every 25 ordinary brother or sister pairs will differ by 35 or more IQ points and one out of every seven unrelated chance pairs would differ that much.

Science News Letter, June 1, 1940

PSYCHOLOGY

Ink Blot Test Distinguishes Psychosis from Neurosis

WHEN a mental disease strikes a victim, the fright and worry over his plight often make him appear much "crazier" than he really is.

The importance of distinguishing these complicating "neurotic" symptoms from those of the organic disease itself was stressed by Dr. Zygmunt Piotrowski, of Columbia University, speaking before the Psychologists League in New York City.

The man who is acutely disturbed over his condition and worried into a state of great excitement may appear to the physician examining him as in a worse condition than another man whose mental disease is actually much more serious. But the prospects for his recovery are much better.

A simple psychological test, using what looks like an ordinary ink blot, enables the psychologist to sort out these "neurotic" patients from those whose illness is caused by uncomplicated mental disease. It takes only one hour. The test also aids the physician by revealing which symptoms are due to the mental disease itself and which result from the secondary neurosis.

The patient, looking at the blot, is asked to tell what he sees in the fanciful shape, as one might see pictures in clouds or curls of cigarette smoke. From the answers, Dr. Piotrowski said, it is possible to tell "with astonishing accuracy" whether the patient's mind is really deteriorated or whether his fears and worries prevent him from using the capacities he has.

Science News Letter, June 1, 1940

AGRICULTURE

Wealth of West Indies May Be Brought Back Home

POSSIBLE acquisition by the United States, as trustee for Western Hemisphere nations, of Caribbean islands and mainland colonies, offers opportunity to rectify one of the strangest of history's ironies.

One of the objectives of Christopher Columbus was the fabled wealth of the Indies—gold, spices, sugar. He found these things in the West Indies on which he stumbled, and many things besides which did not exist in the East Indies which he never knew that he had missed: the comfort of tobacco, the powerful healing of quinine, the manifold usefulnesses of rubber, the appealing flavors of vanilla and cacao, not to mention the solid utilitarian qualities of such staple foodstuffs as corn, potatoes and beans.

And behold what we have done with some of the best of these gifts of the New Indies: rubber and quinine have been transplanted bodily to the now-threatened East, and are produced no more in their original homelands. Even sugar has declined in its importance, in many of the islands (like Guadeloupe, for example) whence it once ruled the world market. Tin, of more real worth in the world than foolishly re-buried gold, is relatively neglected in the Andes, while it is being pushed in far-off Malaya.

Is it not high time some of these things, readily producible in our own dooryard gardens, be brought back home again from their perilous Far Eastern exile?

Science News Letter, June 1, 1940

PSYCHOLOGY

Hope for Older Addicts If They Have Good Record

THE POPPY'S bondage of narcotic drug addiction can be permanently broken by the man about 40 years old, brought up in a comfortable home, with normal childhood and a steady employment record who has become a narcotic drug addict probably by accident. This is the type of drug addict for whom there is a good outlook, Dr. Michael D. J. Pescor, U. S. Public Health Service, discovered from studying more than 1,000 drug addicts at the federal health service's narcotic farms.

The outlook for permanent cure of drug addiction is bad, however, for the "uncooperative voluntary patient over 50 years of age, who sought admission to the hospital because the law was 'hot on his heels,'" Dr. Pescor told the American Psychiatric Association.

This addict has probably tried all kinds of drugs, Dr. Pescor pointed out, and during his 20 years of addiction has had three or more compulsory cures in jails and penitentiaries. As a child he was incorrigible and antisocial. His parents were marginal, his own work record was bad, and he violates other laws.

Science News Letter, June 1, 1940

MEDICINE

Blood Cancer Transmitted By Virus-Like Substance

FURTHER evidence that the cancer group of diseases can be caused by viruses or virus-like substances in the body fluids was presented to the American Association of Anatomists by Drs. Arthur Kirschbaum and Kurt G. Stern, Yale University School of Medicine. They were able to transmit leukemia, which is a kind of blood cancer involving wildfire growth of white corpuscles, from diseased chickens to previously healthy fowl, by injections of blood.

Then they separated the blood into fractions of differing molecular weights by whirling it in an ultracentrifuge until it had been subjected to a force of 67,300 times gravity for half an hour. They found that the heavier fractions had high leukemia-causing capacity, while the lighter portions had little ability to transmit the disease. In physical and chemical properties the leukemia-causing portions of the blood were found to resemble a cancer-causing extract previously obtained by ultracentrifuging cultures of a chicken tumor.

Science News Letter, June 1, 1940

ASTRONOMY

Venus Leaves the Evening Sky

Hanging Like a Gay Lantern in the West All Spring, This Brightest of Planets Will Soon Be Gone from View

By JAMES STOKLEY

THE PLANET Venus, which has been so brilliant all spring that it was often mistaken for some artificial light hung in the western evening sky, is still with us, but it will soon be gone from view. During the first half of the month it will shine toward the direction of the constellation of Gemini, the twins. Of magnitude minus four, at the first of the month, it far surpasses any other star or planet, and there is little difficulty in finding it. There is another planet, Mars, in the same direction, but it is less than a hundredth as bright as Venus. This is quite different from a year ago. Then Mars was unusually close, and was the brightest planet. During the night of June 6, however, Venus passes just to the north of Mars, and then it may more easily be found.

These planets are indicated on the accompanying maps. The charts show the way the skies appear at about 10 p. m. standard time, on June 1, and an hour earlier on June 15.

Of the stars of the June evening sky, brightest is Vega, in the constellation of the lyre, Lyra, high in the northeast. Just below is Cygnus, the swan, in which is found Deneb. The name of this star comes from the Arabic, meaning "tail," a name given because it marks that part of the bird. Cygnus is also known as the northern cross. It now lies on its side.

Aquila, the Eagle

To the right of Cygnus, a little lower, is another bird, Aquila, the eagle, with another first magnitude star, called Altair. The three stars, Vega, Deneb and Altair, make a large right triangle, Vega at the right angle, forming a group that can be easily found.

Directly overhead we see the star-picture of Bootes, the bear driver, with flaming Arcturus. The greater part of the constellation is to the north of Arcturus. Five of its stars form a somewhat distorted pentagon, that suggests the shape of a kite. Arcturus is in the kite's tail.

Below Arcturus is Virgo, the virgin, one of the constellations of the zodiac, the path through which the sun, moon and planets are seen to move. Spica is the brightest star. To the right of Virgo is another zodiacal group, Leo, the lion. This consists of two principal parts. Nearest Virgo is a little triangle, the lion's haunches, and farther to the right is a hook-shaped arrangement, called the sickle. Regulus, the most brilliant star in Leo, is at the end of the handle of the sickle.

Left of Virgo is Libra, the scales, also in the sun's path, but this, mainly forming another pentagon, contains no very brilliant stars. To the left of that is Scorpius, the scorpion, with brilliant antares. Directly south, below Libra, is the rather inconspicuous wolf, Lupus, and Centaurus, the centaur. The latter contains alpha Centauri, the nearest star, except the sun. This star, along with other brilliant parts of the figure, never rises in most of the United States. From southern Texas and Florida, however, it can be seen this month, just above the horizon.

Circumpolar Stars

Looking to the north, you can see that group of constellations called circumpolar, because they revolve around the pole of the sky. These never set, but are always visible, though sometimes in a different aspect. They swing like a wheel around the pole as a hub. One of these is the great dipper, in Ursa Major, the great bear. The two stars Dubhe and Merak, at the end of the bowl, are the pointers. They indicate Polaris, the pole star, which is very close to the pole of the heavens, and stands at the end of the handle of the little dipper. The constellation, Cassiopeia, the queen, shaped like a letter W, is low in the north, not in a very good position. The same is true of Auriga, the charioteer, and Gemini, the twins, near the northwestern horizon. The star Capella is in Auriga, and Castor and Pollux in the Gemini.

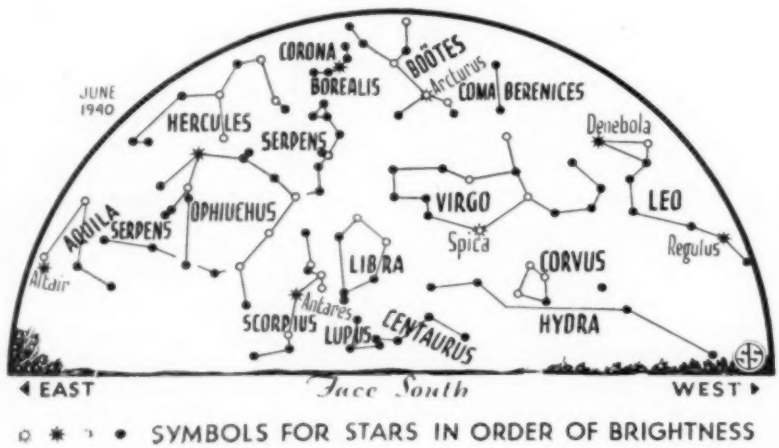
Venus an Illustration

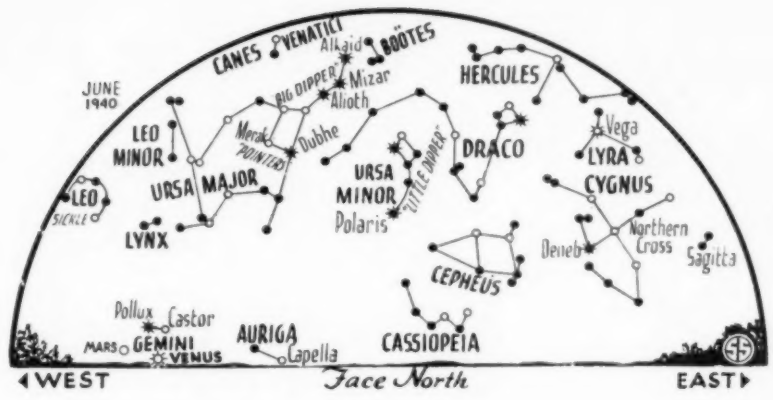
The behavior of Venus this month gives an interesting illustration of the way the planets move around the sun. Last autumn it was beginning to appear in the west just after sunset. Though bright, it did not then shine with the extreme brilliance it has now.

Month after month it brightened, and drew farther from the sun, setting, therefore, later and later in the evening. At the end of April, it stopped drawing from the sun, and started approaching it again, which means that it set earlier each night. Despite this, however, it continued brightening, until May 20.

Now it is undergoing a decrease in brightness. On June 26 it will be in the same direction as the sun, so it will then be entirely invisible. One might arrange a sort of a contest this month, to see how close to the 26th it can still be observed. Early next month, one who watches the eastern sky before sunrise will be able to see it again, shining brightly in that position.

Ages ago, men found this behavior very hard to explain, and at one time they supposed that there were two planets involved, instead of one. They called it Phosphorus when it appeared in the morning, and Hesperus when they saw





it in the evening. Then, even when they realized it was one, they still thought it revolved around the earth, like the sun and the other planets. The complicated Ptolemaic system was erected to explain these movements, and even then it did not do so with entire satisfaction.

Now we know, of course, that Venus, the earth, and all the other planets, revolve around the sun. Venus' path is the one next inside ours. It goes around more rapidly, in 225 instead of 365 days. Nearly a year ago, Venus was in line with the sun, and hence invisible. But unlike its position now it was then on the far side of the sun. The earth and Venus move in the same direction, so Venus gradually caught up to the earth, and on June 26 it will pass us. Being so much closer, it goes by very rapidly, like an automobile a few feet away, compared with one a block away. Even though each one may be going directly across our line of sight and traveling at the same speed, the nearer one seems to move much more rapidly.

Through a telescope this month Venus appears as a narrow crescent, like the very new moon. A year ago it looked more like a full moon. This change, incidentally, provided a very good proof that something was wrong with the Ptolemaic theory. Under that system, Venus was moved around the earth in a path nearer to us than the sun. Hence, it could show a crescent phase, but could not possibly ever appear full. So, when Galileo found in 1610 that it duplicated the complete cycle of the moon's change of phase, he proved that Venus was sometimes nearer, and sometimes farther than the sun. He inserted firmly a very large nail into the coffin of the old Ptolemaic idea.

Celestial Time Table for June

Sunday, June 2, 1:12 p. m., Moon passes Jupiter. **Monday, June 3,** 12:12 a.m., Moon passes Saturn. **Wednesday, June 5,** 8:05 p.m., New moon. **Friday, June 7,** 1:00 a.m., Venus passes Mars; 7:58 a.m., Moon passes Mercury; 11:37 p.m., Moon passes Venus. **Saturday, June 8,** 1:00 a.m., Moon passes Mars. **Tuesday, June 11,** 9:00 p.m., Mercury passes Venus. **Wednesday, June 12,** 8:59 p.m., Moon in first quarter. **Friday, June 14,** 10:00 a.m., Moon nearest—229,400 miles away. **Sunday, June 16,** 8:00 p.m., Mercury passes Mars. **Wednesday, June 19,** 6:02 p.m., Full moon. **Friday, June 21,** 8:37 a.m., Summer commences — sun farthest north. **Monday, June 24,** 9:00 a.m., Mercury farthest east of sun—visible as evening star for few days around this date. **Wednesday, June 26,** 4:00 p.m., Venus passes earth—between earth and sun. **Thursday, June 27,** 6:00 a.m., Moon farthest—251,100 miles away; 1:13 p.m., Moon in last quarter. **Sunday, June 30,** 7:46 a.m., Moon passes Jupiter; 1:47 p.m., Moon passes Saturn.

Eastern Standard Time throughout.

Science News Letter, June 1, 1940

ENGINEERING

New Type of Vacuum Tube Has Unusually Long Life

A NEW TYPE of vacuum tube for amplifying and repeating weak electrical messages that carry long-distance telephone communication has been developed by scientists of the Bell Telephone Laboratories. It is confidently expected to give many years of continuous 24-hour-a-day service.

The present telephone tube, which the new advance replaces, has a theoretical average lifetime of 18,000 hours. The new tube will exceed this several times, scientists report.

Best comparison of the new and the old is that after 22,000 hours of service (two and a half years) only 55% of the old style tubes were in service. With the new tubes 95% were in service after the same interval of time. From comparison of the "death" curves of the two vacuum tubes telephone engineers estimate, conservatively, an average lifetime several times longer for the new tubes than for the old.

For the layman, whose nearest contact with vacuum tubes is probably in his radio set, this new advance will probably be a worry for he knows that his radio tubes are guaranteed only for a life of 1,000 hours of operation. The worry will be the same type of difficulty which arose last year when Dr. F. B. Jewett, vice-president of the American Telephone and Telegraph Company, was vigorously questioned at the Monopoly Committee hearings in Washington about other telephone repeater tubes having a life of 50,000 hours.

It was disclosed then that the principles which give long life to telephone tubes can be applied to the tubes used in radio sets, but that high cost would probably rule them out. Moreover, excessive long life of such tubes, which is the key demand on telephone circuits, would permit them to outlast the rest of a common radio set many times. It would be like putting jewel bearings in a dollar alarm clock.

The extra long life of telephone repeater tubes comes about because of the extreme care in their production, plus a most rigid test, prior to use, which eliminates many tubes which might quickly show failure in service.

Science News Letter, June 1, 1940

★★★★★★★★★★★★★★★★★★★★★★★★★★

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PSYCHIATRY

Recovers from Insanity Within Fifteen Minutes

Other Patients Who Seem To Suffer From Mental Disease or Delirium Relieved by Nicotinic Acid

RECOVERY from insanity within 15 minutes after a single dose of nicotinic acid has been announced as an example of the spectacular achievements of the pellagra remedy in conquering some forms of mental disease.

Most of the patients who have been rescued by this chemical from stupor, lethargy, depression showed no signs of pellagra, Dr. V. P. Sydenstricker and Dr. H. M. Cleckley, of the University of Georgia, declared in their report to the American Psychiatric Association meeting in Cincinnati.

The spectacular, 15-minute recovery occurred in the case of a 66-year-old man who was admitted to the hospital in a greatly agitated state, not realizing where he was and behaving irrationally. He shouted in broken sentences, tried to leap out of bed and was constantly overactive and confused. The doctor's description is typical of the old idea of an insane person.

While the nicotinic acid solution was still flowing into his vein, this man became quiet and cooperative and within a few minutes showed no sign of his mental illness.

Many other patients who seem to be suffering from mental disease or exhaustion delirium, even without signs of pellagra, may, the Georgia doctors believe, be relieved of their symptoms of nicotinic acid.

Science News Letter, June 1, 1940

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SCIENCE NEWS LETTER

2101 Constitution Ave. Washington, D. C.

Sugar May Help "Nerves"

FOR that feeling of nervousness or apprehension, take a lump of sugar or some other sweet.

With the whole world feeling nervous and apprehensive these days, that may prove a popular and helpful slogan. It is based on a report to the American Psychiatric Association, that a strikingly large number of "nervous" patients have abnormally low concentrations of sugar in their blood.

The discovery was made by Dr. William Y. Baker, of Seattle. The patients he examined complained of anxiety, fear, apprehension, tension states, sleeplessness, sweating and spells of uneasiness.

"In some instances of both normals and neurotics," he reported here, "the degree of hypoglycemia (low blood sugar) approximates the level seen in induced coma of insulin shock therapy."

When he discovered the low blood sugar levels in normal persons as well as neurasthenic patients, Dr. Baker investigated further and discovered that these normal persons had vague symptoms of hunger, restlessness or uneasiness at times.

The low blood sugar levels, he said, should be investigated further by psychiatrists because they may have definite bearing on mental illness.

Science News Letter, June 1, 1940

Lie-Awake-Detector

A NEW medical instrument for fighting insomnia, which might be called the Lie-Awake-Detector because it shows up those who "haven't-slept-a-wink-all-night" took a bow at the meeting of the American Psychiatric Association.

Dr. Burtrum C. Schiele, of the University of Minnesota, who invented the device, calls it a motilograph. One leg of the insomniac's bed is fitted into a stirrup by which his every movement is transmitted to the recording part of the apparatus. Next morning he may be confronted with a black-and-white record of the six or eight hours' sound sleeping he did and the few movements he actually made during the night he thought he spent largely in tossing around in bed.

The instrument shows individual movements clearly up to six per minute. The average sleeper moves, changes position or moves some part of his body from 20 to 60 times during the night, Dr. Schiele found. The first half of the night is in most cases decidedly quieter than the last half, although there is a presleep period of settling down in which there is a fair degree of restlessness. This period lasts from a few minutes to a half-hour.

A heavy meal or excitement increases the restlessness during sleep.

When the Lie-Awake-Detector's record was compared with the nurse's sleep chart, the latter was generally found to be reliable, Dr. Schiele reported, although "certain notable exceptions occur."

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●RADIO

Dr. H. M. Marvin, acting executive secretary of American Heart Association, will give facts about the greatest peace-time killer, heart disease, as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, June 6, 4:00 p.m., EDST, 3:00 EST, 2:00 CST, 1:00 MST, 12:00 PST.

Listen in on your local station. Listen in each Thursday.

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PREHISTORIC AND MODERN

A little lamp used by prehistoric man to light his home is here contrasted with a modern 175,000-candlepower airport lighting lamp, both part of the collection to be shown in the New York World's Fair. Modern man gets from this airport lamp 250,000 times as much light as prehistoric man got from his. Shown in the picture are Dr. Charles F. Brown, archaeologist, discoverer of the ancient lamp, Miss Helen V. Ademek, photometrist, and Preston F. Millar of the Electrical Testing Laboratories.

SOCIOLOGY

Europe's Disaster Not Yet Realized by Americans

Red Cross Officials Face Problem of Dozen Countries In Desperate Plight at Once; Few Able To Contribute

WAR spreading in Europe is creating a disaster so huge and unbelievable that Americans hardly grasp it yet.

"It is hell turned loose—and no precedents!"

So declares quiet-spoken Malcolm W. Davis, Associate Secretary-General of the League of Red Cross Societies, on a flying visit from Geneva to this country. If any one knows what it means to secure food, clothing, medicines for a dozen countries in desperate plight at once, with transportation and red tape and war dogging every move, that official is Mr. Davis.

Each new country overrun by war makes the relief of homeless and injured people harder, more complicated.

Belgium and the Netherlands were among 21 countries of the world that gave money, clothing, food, and first aid via Red Cross societies to Finland. Now Belgium and the Netherlands are crossed off the credit side of the relief ledger, and entered on the debit side—urgently needing help for themselves.

Not merely will they be out of the list of giving nations, for a while, at least, but the relief supplies that they could spare for sale are cut off. Glycerine products used in medical work, for example, have been one of the Netherlands supplies, now to be sought elsewhere.

Expending Red Cross money for supplies to be shuttled to Poland, to Hungary, France, or other countries sheltering refugees and evacuees becomes a nightmare of shopping, it would seem from Mr. Davis' methodical telling of how the purchasing must be done. In Switzerland, it has been possible to purchase anesthetics and milk products. In Italy the Red Cross societies have found it possible to get important medicines and chemicals, notably anesthetics and narcotic drugs. Spain is the one place to buy mercury, for hospital use. Arranging such shipments, the relief organizers buy from day to day not knowing what market will be shut off next.

To keep supplies moving where needed, the League of Red Cross Societies, with its headquarters in Geneva, has had to expand its staff of 20 regular employees and add volunteer aids.

So short are stocks of supplies purchased for the injured, hungry and homeless, that money is less and less useful for urgent purchases by the Red Cross on the spot, he explained. Money contributed in Brazil may be expended in France, though the supplies are destined to help Polish refugees in Hungary.

When people asking for food or other emergency aid are within the ring of the war, it requires the red tape of an agreement with both warring sides before shipments can pass the Allied blockade and enter the distressed area. To reach neutral countries outside fighting zones, on the other hand, only Allied permission to pass the blockade is required.

Repeatedly, coordinating officials of relief in Europe must give assurance that shipments can be speeded straight to relief use, as the military powers watchfully eye any chance of supplies being diverted to military purposes.

Civilians fleeing the world's greatest battle in northeastern France and Belgium have flooded central France with 5,000,000 refugees. Some Dutch and Belgians have reached England. Earlier, on May 1, the American Red Cross had assembled these "latest" reports on Europe's refugees and evacuees:

England, 500,000; France, 500,000; Finland, 470,000; Hungary, 40,000, all Polish; Latvia, 1,450 Polish; Lithuania, 39,000 Polish, also 80,000 destitute residents in Vilna; Sweden, at least 18,000; Rumania, 22,000; Yugoslavia, 1,000.

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These figures include the women, invalids, and children removed from crowded cities and other danger zones in England and France, and the refugees who have fled from the havoc of war to regions temporarily offering safety.

Science News Letter, June 1, 1940

MILITARY SCIENCE

Air-Plus-Troops Tactics Operate in Limited Depth

Germans Have Conducted No Long-Distance Raids; Have Made Succession of Short Hops of 150 Miles

DESPITE their horror at its ruthlessness, aviation experts, in commenting among themselves on Germany's blitzkrieg strategy, agreed that Nazi use of air power would necessitate rewriting of the world's military textbooks.

German operations in Poland and Norway, and in the Low Countries, differ widely from imaginative pre-war conceptions of air attack, though they are hardly less horrible. The story-book versions never took account of the limitations of aircraft or of the nature of war. The Nazis do in flawless manner. Thereby hangs a tale of crucial importance as Uncle Sam prepares to look to his defenses, to the tune of a probable billion dollars or two over the vast sums already spent and being spent on the Army, Navy and Air Corps.

Not once has Germany attempted seriously-intended long-distance raids. The Nazi high command has never essayed use of its planes for long-distance striking purposes. The few long-distance bomb-dropping flights over England carried out so far have been aimed at encouraging the British to keep an abnormally large number of defending fighters at home—plus such incidental purposes as mine-laying and reconnaissance. In a sense the British have been taken in by German propaganda about the long-range striking power of aircraft, when in fact no such real menace existed until the Nazis overran Norway and Holland. The Germans, however, never made the mistake of taking their own word for it.

On the contrary, they have used aircraft systematically against nearby objectives, not more than 150 miles away from their bases. The German progression has been a series of short hops. Having occupied the first set of bases, they used them to get the second set, and so on.

There are two reasons for this, both connected with the inherent limitations of air power in 1940. First, an objective must be attacked repeatedly—every few minutes—until its destruction has been assured and the ground is too hot for the defenders to hold. Second, aircraft themselves cannot occupy ground, which is the necessary objective of war. (This is true despite the usefulness of transport-landed soldiers and parachute troops in causing confusion in enemy ranks.)

The first, repeated attack, can be achieved only with difficulty at distances of 500 miles. Because of the time each plane requires to make the round trip, too many planes are needed. The second, occupation with infantry, can of course be expected only in the zone immediately in advance of ground troops. Therefore the devastating short-range Nazi air attack.

Germany's bombers are being used more like long-range artillery than like the long-range striking weapon of legend. All this requires extremely close coordination of aircraft, artillery, mechanized forces and infantry, which the Allies so far have not achieved. This may not look startling on paper, but it is to the man fighting against it. It increases by a few score miles the depth of the area subject to the destructive barrages of World War I type. Troops often have to (and did, during the last war) retire temporarily under such a barrage. They have now farther to go in returning to the front to meet the inevitable following infantry and mechanized column attack.

This means, among other things, that air attacks on New York are still a long way off. They will be for years to come. But, at the same time, for those contemplating eventual American entrance into the war, talk of bombing Europe with giant craft is nonsense, too.

Science News Letter, June 1, 1940

PSYCHOLOGY

Story of "Baboon Boy" Now Thrown in Doubt

WHAT appeared to be an authentic case of a human baby raised by baboons, one of the strangest stories in science annals, is now called in doubt by continued scientific study of the case.

Last January the *American Journal of Psychology* carried a scientific report from Prof. John P. Foley, Jr., of George Washington University, quoting data obtained by the noted South African anatomist, Dr. Raymond A. Dart, giving credence to the story of a 48-year-old man in South Africa who, when about 13, was supposed to have been rescued from baboons by police. (*SNL*, April 6)

Like Kipling's Mowgli, suckled by wolves, the man known by the single name of Lucas, was supposed to have been a child of the wild, a "baboon boy" who spent his childhood in the company of animals, not human beings.

Prof. Foley now reports that more digging into the history of the "baboon

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boy" throws doubt on his life among the baboons.

A blow on his head, which Lucas said was an ostrich kick, may have been an ordinary skull fracture. Such an injury might have caused his unusual behavior, supposed to have been a result of an unusual childhood among the baboons.

A physician of Grahamstown, in South Africa, Dr. Dru Drury, dug into the strange case of Lucas, the baboon boy, now working on a farm. The facts just unearthed seem to be that the half-breed boy was admitted to Grahamstown Mental Hospital in 1904 suffering from an injury of the head. Diagnosis was "acute mania." His mother and father were unknown. No mention of baboons or of the ostrich kick occurs in the hospital records.

The police story, hearsay evidence now because the officer who is supposed to have made the rescue is now dead, placed the finding of Lucas among the baboons at Burghersdorp, too many miles from Grahamstown to make it plausible that he would have been hospitalized there.

Prof. Foley concludes that the baboon boy of South Africa must be listed among the unconfirmed stories of "animal children," rather than as an authentic case of a human child living among animals.

Details will be published in the *American Journal of Psychology* (May).

Science News Letter, June 1, 1940

GENERAL SCIENCE

Not Science, But Philosophy And Religion Failed World

Scientists Should Explain Bearing of Discoveries On Social Problems and Encourage Scientific Methods

ANSWERING those critics who have blamed science for the horrors of modern warfare which threatens civilization, Dr. Harlow Shapley, director of the Harvard Observatory and internationally renowned scientist, declared that "it is philosophy and religion which have betrayed us, not the engineers."

Science, he declared, must turn its attention to two things, both of them of high social importance: "the public explanation of the bearing of our past and current discoveries on the problems of life and society, and the encouragement of the use of at least semi-scientific methods in the treatment of confused human problems in the hope of eventual emancipation from the slavery of slogans."

Dr. Shapley spoke on science in a symposium on "Our Expanding Horizons" before the annual meeting of the Associated Harvard Clubs in New York City. Other speakers discussed education, foreign affairs and industry.

After pointing briefly to recent research in various fields of science, Dr. Shapley said it would be possible to guess what lies ahead, "the future conquests of intellectual man's scientific curiosity—if indeed ahead there lies scientific curiosity or intellectual man, or anything but a trough in the rhythmic curve of civilization—anything but an epoch of realism, marked by greed and inanity.

"But I do not venture to forecast detail," he continued, "partly because you are now thinking of submarines and bombers, blood and explosives—and perhaps you are unkindly saying, 'See what you scientists have done to civilization'."

This charge—"that science has outrun itself, that it has brought woe, and pain and confusion, more than happiness, comfort and order"—are made almost exclusively, he said, "by vain people whose failure to understand the simplest techniques have produced an inferiority and a defense.

"If you do believe that the present tragic world order should be charged to physicists, chemists and engineers, then I assume that you have not thought it through," he declared. "There is undoubtedly superficial justification for a hasty opinion of that sort; but is it not true that the tragic decay of the present comes not from the abuse of the sciences and their products, but more probably from the abuse of the ordinary rules of rational intercourse between rational human beings; the abuse of ethics and logic?

"The perversion is of international morality and not of gadgetry. It is philosophy and religion that have betrayed us—not the engineers."

To the contention that the radio helps the charlatan to reach his dupes, Dr. Shapley answered that the same radio "should help still more in releasing people from their natural dupehood."

Science, he emphasized, has "an important social job on the horizon, namely the intrusion of rationality and logical methodology into non-scientific fields. I do not know how to intrude successfully—perhaps by education, perhaps by example.

"A great contribution would result if we could depopularize slogans—those common opiates of thought. Mankind suffers from the patter of slogans, the catchphrase philosophies and other cheap substitutes for reasoning.

"Morality in physics and chemistry, I am intimating, is to some extent forced. The scientist is naturally as human in his irrationality as others. But survival requires a kind of honesty. The amoral experimenter poisons himself or blows himself up.

"If only a false economic doctrine, while still prenatal, would also electrocute its progenitor! Or an educational schism backfire during fabrication and reduce its advocate to impotent illiteracy and confusion!"

Science News Letter, June 1, 1940

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EXPLORATION

THE WANDERING LAKE—Sven Hedin, translated from the Swedish by F. H. Lyon—*Dutton,* 291 p., photographs and pen and ink sketches by author, $3.75. Lop-nor, a lake of Central Asia which has many features of geological and biological interest, has long fascinated Dr. Hedin. Having long ago deduced that it shifts its location in the desert, he returned to it—as told in this book—to study further the conditions of its wanderings.

Science News Letter, June 1, 1940

PHYSICS—METEOROLOGY

PLAYING WITH LIGHTNING—K. B. McEachron and Kenneth G. Patrick—*Random House,* 231 p., illus., $2.50. The General Electric Company's display of man-made lightning at the N. Y. World's Fair makes especially timely this interesting and authoritative book, written by the director of their lightning research, in collaboration with one of his associates. See page 339.

Science News Letter, June 1, 1940

ELECTRICITY

PRACTICAL ELECTRICITY AND HOUSE WIRING — Herbert P. Richter — *Drake,* 183 p., $1.50. A technical and practical step-by-step treatise in planning house wiring.

Science News Letter, June 1, 1940

CHEMISTRY

ELECTROCHEMISTRY AND ELECTROCHEMICAL ANALYSIS; Vol. I, Electrochemical theory—Henry J. S. Sand — *Chemical Pub. Co.,* 133 p., $2. A British textbook outlining the modern methods of electrochemical analysis.

Science News Letter, June 1, 1940

CHEMISTRY

METHODS FOR THE DETECTION OF TOXIC GASES IN INDUSTRY, Leaflet no. 8, Phosgene, 7 p., 75c.; Leaflet no. 9, Arsine, 6 p., 75c.; Leaflet no. 10, Chlorine, 7 p., 10c.; Leaflet no. 11, Aniline Vapour, 9 p., 10c.—Gt. Brit., Dept. of Scientific and Industrial Research—*British Library of Information.*

Science News Letter, June 1, 1940

PSYCHOLOGY

AMERICAN PSYCHOLOGY BEFORE WILLIAM JAMES—Jay Wharton Fay—*Rutgers Univ. Press,* 240 p., $2.50. It was in 1715, that 19-year-old Samuel Johnson, Yale tutor, later to be first president of King's College, wrote: "The heavens, angels, and human souls being above the sphere of matter and motion present themselves to be the subject of the science metaphysics or pneumatics, etc." The writings of such early American pioneers in psychology and philosophy, as described and quoted here, hold much of intense interest to students of the development of learning in this country.

Science News Letter, June 1, 1940

PSYCHIATRY

PSYCHOBIOLOGY AND PSYCHIATRY—Wendell Muncie—*Mosby,* 739 p., $8. A medical textbook from the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital which, Dr. Adolph Meyer tells us in a foreword, "was written out of concrete practice, a free upshot from actual diagnostic and treatment work and the teaching in our hospital . . . It offers a very human orientation to those who wish to enter the specialty and to those who consider a fair degree of familiarity with man as person a necessary part of all medical responsibility."

Science News Letter, June 1, 1940

CHEMISTRY

PRINTING INKS, Their Chemistry and Technology — Carleton Ellis — *Reinhold Pub. Corp.,* 560 p., $7. It is hard to conceive of any possible question concerning printing inks or their history which is not answered here. The references and the index are unusually complete. These, with a glossary, greatly enhance the value of the work.

Science News Letter, June 1, 1940

TECHNOLOGY

THE DICTIONARY OF PAPER—*American Paper and Pulp Assn.,* 365 p., $5. For the paper expert this volume will be very useful for it gives a definition of the thousands of terms which apply in this industry.

Science News Letter, June 1, 1940

AERONAUTICS

THE AVIATION BUSINESS—Elsbeth E. Freudenthal — *Vanguard Press,* 342 p., $3. Aviation today is big-business. Its history from the business viewpoint has long needed writing.

Science News Letter, June 1, 1940

ENGINEERING

DEFICIENCIES IN HYDROLOGIC RESEARCH —National Resources Planning Board—*Govt. Print. Off.,* 93 p., 25c.

Science News Letter, June 1, 1940

PHYSICS

WHY SMASH ATOMS? — Arthur K. Solomon—*Harvard Univ. Press,* 174 p., $2.50. The story of the attack on the atomic nuclei is told simply, lucidly and with authority. The author is one of the group of research workers around the Harvard cyclotron.

Science News Letter, June 1, 1940

HORTICULTURE

THE BOOK OF GARDEN IMPROVEMENTS —Walter Brett—*Chemical Pub. Co.,* 256 p., $2.50. English gardens have long been the admiration, and within reason the model, of home owners this side of the Atlantic. This book by an English author, packed with practical suggestions about materials and methods, will be of great assistance to all who wish to develop their home grounds in the easy, livable English style.

Science News Letter, June 1, 1940

HORTICULTURE

THE HOME BOOK OF TREES AND SHRUBS —J. J. Levison—*Simon and Schuster,* 424 p., $5. Proper plantings of trees and shrubs do more than any other one thing to make a house settle down on its grounds and turn itself into a home. This book brings to bear upon the planting question the fruits of the author's long and succesful experience: it tells what to plant, where to plant, how to prune and protect your plantings. Excellently chosen illustrations add emphasis and clarity.

Science News Letter, June 1, 1940

FORESTRY

KINGDOM OF THE TREES—Erle Kauffman—*Reilly and Lee,* 122 p., $2. Ben and Betty walk the woods with their forester Uncle John, while he talks about trees and they soak up information like the mental sponges bright youngsters are. The informal, chatty style makes it easy for other boys and girls to join the party and thereby get their first (and lasting) taste of the learning of the forests.

Science News Letter, June 1, 1940

ELECTRICAL ENGINEERING

INTRODUCTION TO ELECTRICAL MACHINES—A. W. Hirst—*Chemical Pub. Co.,* 122 p., $2.25. A concise and up-to-date textbook suitable both for electrical engineers and for the students of the university and college. The book is written for the English educational system and so one can admire its thoroughness.

Science News Letter, June 1, 1940